

COMMERCIAL STANDARD CS163-64

Supersedes CS163-59 and CS193-53

Ponderosa Pine Windows, Sash, and Screens

(Using Single Glass and Insulating Glass)

MAINTAINED

A recorded
voluntary standard of the
trade published by
the U.S. Department
of Commerce



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NATIONAL BUREAU OF STANDARDS
Office of Commodity Standards

With the cooperation of the
Forest Products Laboratory
Forest Service
U.S. Department of Agriculture

EFFECTIVE DATE

Having been passed through the regular procedures of the Office of Commodity Standards (formerly the Commodity Standards Division, Office of Technical Services; transferred to the National Bureau of Standards July 1, 1963) and approved by the acceptors hereinafter listed, this Commercial Standard is issued by the U.S. Department of Commerce, effective March 17, 1964.

LUTHER H. HODGES, *Secretary.*

COMMERCIAL STANDARDS

Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Office of Commodity Standards of the National Bureau of Standards. Their purpose is to establish quality criteria, standard methods of test, rating, certification, and labeling of manufactured commodities, and to provide uniform bases for fair competition.

The adoption and use of a Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforceable through usual legal channels as a part of the sales contract.

Commercial Standards originate with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Office of Commodity Standards the necessary data to be used as the basis for developing a standard of practice. The office by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the office assures continuous servicing of each Commercial Standard through review and revision whenever, in the opinion of the industry, changing conditions warrant such action.

SIMPLIFIED PRACTICE RECOMMENDATIONS

Under a similar procedure the Office of Commodity Standards cooperates with industries in the establishment of Simplified Practice Recommendations. Their purpose is to eliminate avoidable waste through the establishment of standards of practice for sizes, dimensions, varieties, or other characteristics of specific products; to simplify packaging practices; and to establish simplified methods of performing specific tasks.

The initial printing of CS 163-64 was made possible through the cooperation of the National Woodwork Manufacturers Association.

PONDEROSA PINE WINDOWS, SASH, AND SCREENS
(using single glass and insulating glass)
(Fourth Edition)

Effective March 17, 1964

1. PURPOSE

1.1 The purpose of this Commercial Standard is to establish a nationally recognized standard for stock ponderosa pine windows, sash and screens for the guidance of producers, distributors, architects, builders and the public; to avoid delays and misunderstandings; and to effect economies from the producer to the ultimate user through a wider utilization of these standard items.

2. SCOPE AND CLASSIFICATION

2.1 SCOPE—This standard provides the layouts, construction details, and minimum specifications for the following standard stock windows, sash, and screens fabricated from ponderosa pine wood. It includes provisions for materials, preservative treatment, methods of glazing and screening, design details, dimensions, glass sizes for single and insulating glass, and tolerances. It also includes a uniform means of identifying and grade marking those products made in conformance with this standard. A list of definitions of trade terminology is given.¹

SINGLE GLASS—Specifications are provided for stock ponderosa pine windows and sash using single glass (single strength and double strength) in the nominal thicknesses of $1\frac{1}{8}$ and $1\frac{3}{8}$ in. and for picture sash and hotbed sash in the nominal thickness of $1\frac{3}{4}$ in.

INSULATING GLASS—Specifications are provided for stock ponderosa pine windows and sash $1\frac{3}{8}$ in. and thicker using insulating glass (single strength and double strength).

SCREENS—Specifications are provided for stock ponderosa pine windows and sash screens in nominal thickness of $\frac{3}{4}$ and $1\frac{1}{8}$ in.

2.2 The revised requirements for insulating glass windows and sash covered by this Standard supersede those formerly given in CS193-53, Standard Stock Ponderosa Pine Insulating-Glass Windows and Sash.

2.3 CLASSIFICATION—A list of all items covered herein is given in the Classification Index. The standard layouts, opening sizes, and glass sizes are given in Tables 1 through 32. The standard design details are given in Figures 1 through 4.

CLASSIFICATION INDEX

PRODUCT	Table No.	Page No.
Single Glass Windows (2 or more sash):		
Check Rail (Double-Hung) Windows, $1\frac{3}{8}$ in. thick:		
Two-Light	1	8
Four-Light-High	3	8
Four-Light, Two-Wide	2	8
Six-Light, Three-Wide	5	9
Top Two-Light-Wide	8	9
Top Three-Light-Wide	4	8
Top Four-Light, Two-Wide	6	9
Top Six-Light, Three-Wide	9	9
Top Four-Light-Wide	7	9
Top Eight-Light, Four Wide	10	9
Eight-Light, 4 over 4	11	10
Twelve-Light, 6 over 6	13	10
Sixteen-Light, 8 over 8	12	10
Fifteen, Eighteen, Twenty, and Twenty-Four Light	15	10
Cottage, Two-Light	14	10
Plain Rail (Double-Hung) Windows, $1\frac{1}{8}$ in. thick	16	11
Single Glass Sash:		
Barn or Utility, $1\frac{1}{8}$ and $1\frac{3}{8}$ in. thick	18	11
Casement, $1\frac{3}{8}$ in. thick	19	12
Cellar, $1\frac{1}{8}$ and $1\frac{3}{8}$ in. thick	21	12
Hotbed, Three-Lights Wide, $1\frac{3}{8}$ and $1\frac{3}{4}$ in. thick	17	11
One-Light, $1\frac{3}{8}$ in. thick	22	12
One-Light, Divided, $1\frac{3}{8}$ in. thick	25	14
Picture, $1\frac{3}{4}$ in. thick	20	12
Storm Sash, $1\frac{1}{8}$ in. thick	23	13
Transoms, One-Light, $1\frac{3}{8}$ in. thick	24	13
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Stationary Sash, One-Light, $1\frac{3}{8}$ and $1\frac{3}{4}$ in. thick, for 7/16 in. thick insulating glass	26	14
Stationary Sash, One-Light, $2\frac{1}{4}$ and $2\frac{5}{8}$ in. thick, for 1 in. thick insulating glass	28	14
Screens for Windows and Sash:		
Full Size Window, Two-Light $\frac{3}{4}$ and $1\frac{1}{8}$ in. thick	29	15
Half-Window, (Double-Hung) $\frac{3}{4}$ and $1\frac{1}{8}$ in. thick	31	15
One-Light Sash, $\frac{3}{4}$ and $1\frac{1}{8}$ in. thick	30	15
Cellar Sash, $\frac{3}{4}$ and $1\frac{1}{8}$ in thick	32	15

3. GENERAL REQUIREMENTS

3.1 All standard stock ponderosa pine windows, sash and screens labeled or otherwise designated as complying with this Commercial Standard shall conform to all of the quality requirements contained herein (see par. 6.1).

¹ This standard does not cover any requirements for installing these window, sash, and screen items in a window frame, therefore, there are no requirements herein for the frame, the weatherstripping, the balancing device, or for air infiltration. Complete wood window units are described in Commercial Standards CS190 for Double-Hung Windows, CS204 for Awning Windows, and CS205 for Casement Windows, CS264 and CS265 for Horizontal Sliding Windows, and CS266 for Single-Hung Windows.

3.2 WOOD—All windows, sash and screens shall be made of ponderosa pine that has been dried to a moisture content of 6 to 12 percent before manufacture, and is free from defects. Light brown water stain and light red kiln burn will not be considered defects. Light blue stain will be allowed in any wood parts of plain rail windows, cellar sash, hotbed sash and barn or utility sash.

3.3 WORKMANSHIP—Windows, sash and screens shall be well manufactured. Both sides of all assembled sash, and screens, and the top face of bottom sash check rails shall be machine-sanded or equivalent finish.

3.4 CONSTRUCTION—The sash and all tenoned screens shall be well clamped together and all rail tenons carefully pinned with metal pins or equivalent. All $1\frac{3}{8}$ in. sash shall have one pin at each end of at least one bar. Metal pins shall have a cross-sectional area at the middle point of the pin of not less than 0.008 sq. in. Stiles and rails shall have solid stickings. All joints shall be coped and well fitted. All stiles and rails of putty-glazed sash shall have putty grooves and/or indentations in the putty rabbet.

3.4.1 MORTISED-AND-TENONED CONSTRUCTION—Windows, sash and screens may be made by mortised-and-tenoned construction. The tenon width shall be not less than two-thirds of the overall rail width. Mortised-and-tenoned sash and screens shall be pinned, in accordance with paragraph 3.4, with not less than one pin at each end of top rail and check rails, and with not less than two pins at each end of bottom rails except that $1\frac{3}{8}$ in. and thicker sash utilizing insulating glass must have two pins at each end of top rail instead of one pin.

3.4.2 SLOTTED CONSTRUCTION—Windows, sash and screens may be made by slotted construction. All slotted sash and window screens shall be pinned, in accordance with paragraph 3.4, with not less than two pins at each end of bottom rail and with one pin at each end of top rail and check rails, or middle rails except that $1\frac{3}{8}$ in. and thicker sash utilizing insulating glass must have two pins at each end of top rail instead of one pin.

3.4.3 DOWELLED CONSTRUCTION—Screens may be made by dowelled construction. Stiles and rails shall be bored to receive dowels not less than $\frac{3}{8}$ in. in diameter by 3 in. in length. Dowels shall have glue grooves and/or indentations and be sized for a drive fit. Dowels shall be set in water-resistant glue and extend one-half their length into each stile and rail, and be assembled under pressure. The number of dowels at each end of the rails shall be as follows:

Top rail — 1 or 2 dowels, at the option of the manufacturer.

Center rail — 1 dowel.

Bottom rail — 2 dowels.

3.5 STILES—The stiles of all double-hung check-rail windows shall be machined for the type of balances for which they are designed, unless otherwise specified.

3.6 BOTTOM RAILS—Bottom rails of check rail windows, storm sash and $1\frac{1}{8}$ in. window screens shall be beveled to a pitch of 14° with a tolerance of plus or minus 1° (approximately 3 to 12 inches). At the option of the manufacturer, $\frac{3}{4}$ in. window screens may be beveled to a pitch of 14° with a tolerance of plus or minus 1° or with an oval bottom edge.

3.7 CHECK RAILS—Check rails shall be machined and notched for a $\frac{1}{2}$ in. parting stop projection when parting stops are used.

3.8 DIVIDED-LIGHT windows made on two-light layouts are acceptable under this standard.

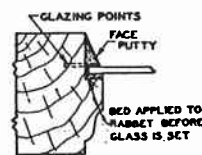
3.9 PREFITTING—All windows, sash, storm sash and screens shall be made to prefit measurements as specified in layouts. A size tolerance of plus or minus $1/16$ in. shall be allowed.

3.10 FINISHED THICKNESS—The finished thickness of all nominal $1\frac{3}{8}$ in. windows and sash shall be $1-11/32$ in., with a tolerance of plus or minus $1/32$ in. The finished thickness of all nominal $1\frac{3}{4}$ in. picture sash and hotbed sash shall be $1-11/16$ in., with a tolerance of plus or minus $1/32$ in. The finished thickness of all $2\frac{1}{4}$ in. picture sash shall be $2-7/32$ in. with a tolerance of plus or minus $1/32$ in. The finished thickness of all nominal $2\frac{5}{8}$ in. picture sash shall be $2-19/32$ in. with a tolerance of plus or minus $1/32$ in. The finished thickness of all nominal $1\frac{1}{8}$ in. windows, sash and screens shall be $1-3/32$ in. with a tolerance of plus or minus $1/32$ in. The finished thickness of all nominal $\frac{3}{4}$ in. window screens shall be not less than $21/32$ in.

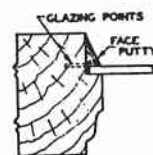
3.11 PARTS TOLERANCE—A tolerance of $1/32$ in., plus or minus, shall be allowed in the width of all machined parts.

3.12 PRESERVATIVE TREATMENT—All windows, sash, and screen assemblies shall be water-repellent preservative treated at the factory in accordance with the latest edition of Commercial Standard CS262, Water-Repellent Preservative Non-Pressure Treatment for Millwork.²

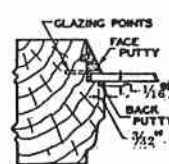
3.13 GLAZING—SINGLE STRENGTH AND DOUBLE STRENGTH GLASS—Unless otherwise specified, all windows and sash shall be glazed with single-strength "B" glass except that the maximum size glass in any sash shall be 76 united inches (width plus height) for single strength "B" glass and 100 united inches for double strength "B" glass. The glass in all $1\frac{3}{8}$ in. double hung windows and casement sash and one light sash and picture sash shall be either bedded in putty or glazing compound or be putty galzed on the reversed side, using a secondary putty rabbet; or, at the option of the manufacturer or fabricator, they may be adhesive bedded. Regardless of the method used, a positive seal shall be provided between the glass and the wood on both sides of the glass. In addition, all windows (including both the check rails) and sash shall be either face puttied or wood stop glazed. Storm sash may be either face puttied or wood stop glazed. In lieu of above, unless otherwise specified, sash may be glazed in solid sticking at the time of assembly, after bedding compound has been applied in the sash groove. Glazing methods herein provided shall be in accordance with the following:



3.13.1 BEDDING—A thin layer of putty or bedding compound is placed in the rabbet of the sash and the glass is pressed onto this bed. Glazing points are then driven into the wood and the sash is face-puttied. The sash is then turned over and the excess putty or glazing compound that emerged on the other side is removed.



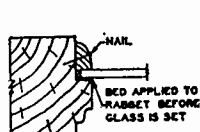
3.13.2 FACE PUTTYING—Glass is inserted in the glass rabbet and securely wedged where necessary to prevent shifting. Glazing points are also driven into the wood to keep the glass firmly seated. The rabbet is then filled with putty, the putty being beveled back against the glass.



3.13.3 BEDDING, SECONDARY PUTTY RABBIT—After the sash has been face-puttied, it is turned over and putty is run into the secondary putty rabbet, and into any voids that may exist between the glass and the wood parts.

²Copies of Commercial Standards referenced herein are obtainable from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Prices should be obtained in advance.

3.13.4 ADHESIVE BEDDING—A continuous ribbon or bead of an effective flexible adhesive bedding material is run into the rabbet in a neat manner, and the glass is pressed into the rabbet with sufficient pressure to insure a bond between the glass and the wood throughout the full perimeter of the rabbet. The adhesive material shall be of such a nature that the bond between the glass and the wood of the stiles, rails, muntins and bars, if any, is equal to or greater than that provided by the use of glazing points and wedges, and in addition shall form a water tight seal. If found necessary by the manufacturer to achieve full contact about the perimeter, one or more glazing points may be used. After the adhesive has developed at least 50 percent of its maximum bond strength according to the specifications of the manufacturer, the sash shall be face-puttied.



3.13.5 WOOD-STOP GLAZING—A thin layer of putty or bedding compound is placed in the rabbet of the sash and the glass is pressed onto this bed. Glazing points are not required. Wood stops shall be

securely nailed in place. The sash is then turned over and the excess putty or glazing compound that emerged on the other side is removed.

3.14 GLAZING—INSULATING GLASS—All sash using $\frac{3}{8}$, and $\frac{7}{16}$ in. insulating glass shall have a clearance of at least $\frac{1}{16}$ inch between the edges of the glass and the stiles and rails. All sash using 1 in. insulating glass shall have a clearance of at least $\frac{1}{4}$ in. between the edges of the glass and the stiles and rails. The insulating glass in $1\frac{3}{8}$ in. double-hung windows shall be bedded in putty or glazing

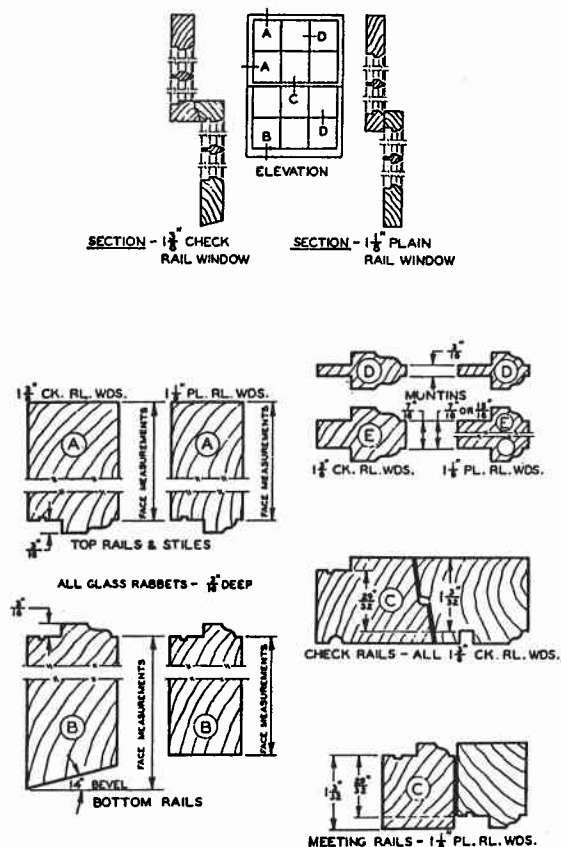


FIGURE 1. Details of $1\frac{3}{8}$ inch check rail and $1\frac{1}{2}$ inch plain rail windows.

compound to provide a positive seal between the glass and the wood and shall be wood stop glazed. In lieu of above, unless otherwise specified; $1\frac{3}{8}$ in. sash may be either glazed in (1) solid sticking at time of assembly after bedding compound has been applied in the sash groove to provide a positive seal between the glass and all wood surrounding the glass or (2) a flexible vinyl glazing strip complying with the latest edition of Commercial Standard CS230, Vinyl Plastic Weatherstrip.

3.15 INSECT SCREENING—Either aluminum, galvanized steel, or bronze insect wire screening conforming to the latest edition of Commercial Standard CS138, Insect Wire Screening, shall be used on window screens at manufacturers' option. Fiber glass screening conforming to the latest edition of Commercial Standard CS248 Vinyl-Coated Glass Fiber Insect Screening and Louver Cloth may be used on $1\frac{1}{8}$ in. screens if applied in a groove with a spline sufficiently pliable to engage the screening and hold it securely in the groove. The mesh of the insect screening shall be 18 by 14, or 18 by 16.

Metal Screening in window screens shall be either rolled into a groove on the face of the stiles and rails or tacked on the face of the stiles and rails. When screening is tacked, the tacks or staples (and in all instances the brads or staples for applying the molding) shall be of copper or brass where bronze screening is used; of galvanized or plain steel where galvanized screening is used; or of galvanized steel, zinc, tinned steel, stainless steel, blued steel, bright steel or aluminum where aluminum screening is used. The molding on window screens may be either flush or raised. Screen molding shall be mitered at the four corners.

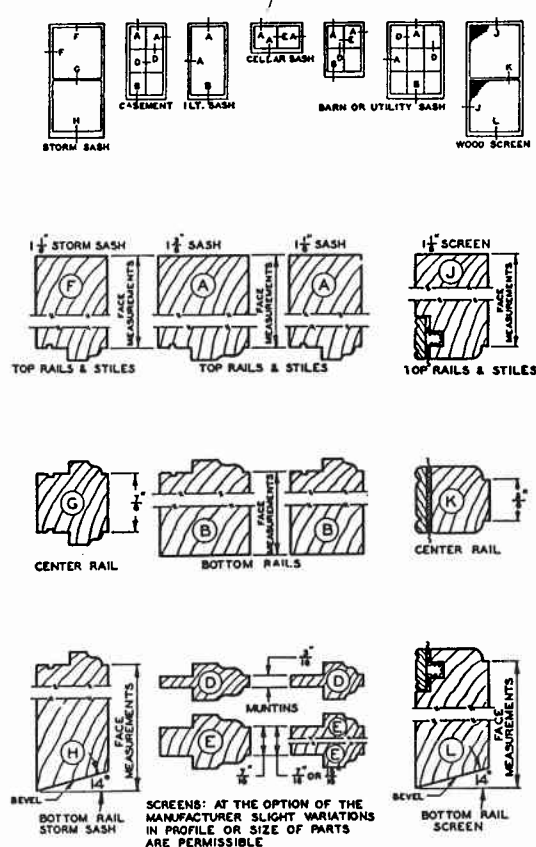


FIGURE 2. Details of storm sash, single sash, and screens.

4. DETAIL REQUIREMENTS

4.1 STANDARD DESIGNS AND LAYOUTS—The design details and layouts of the wood windows, sash, and screens covered by this Standard are shown in the following figures:

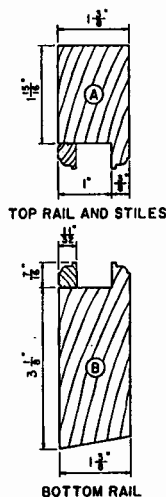
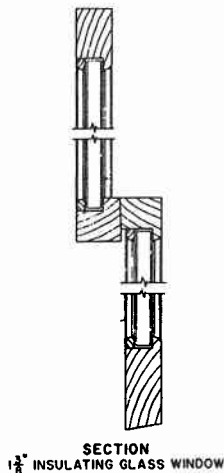
Figure 1—Details of $1\frac{3}{8}$ in. check rail and plain rail windows for single-strength and double-strength glass.

Figure 2—Details of storm sash, single sash, and screens.

Figure 3—Details of $1\frac{3}{8}$ in. check rail windows for insulating glass.

Figure 4—Details of $1\frac{3}{8}$, $1\frac{3}{4}$, $2\frac{1}{4}$ and $2\frac{3}{8}$ in. picture sash for insulating glass.

4.2 STANDARD PARTS—Several widths of stiles, top rails, bottom rails and muntins are required in order to minimize the cutting of glass to fractional sizes in divided-light windows and sash. Specific layouts for all designs of windows, sash and screens are given in the heading above each design appearing in Size Tables 1 through 32. Deviations of the purchaser of any kind from these standard layouts necessarily result in windows, sash or screens referred to as "specials." Standard opening sizes and glass sizes are given in Section 5. Windows, sash, and screens are made slightly smaller than the opening sizes given in the tables (see each table).



NOTE:
PROFILE OF STICKING IS OPTIONAL
WITH MANUFACTURER

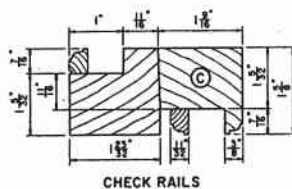
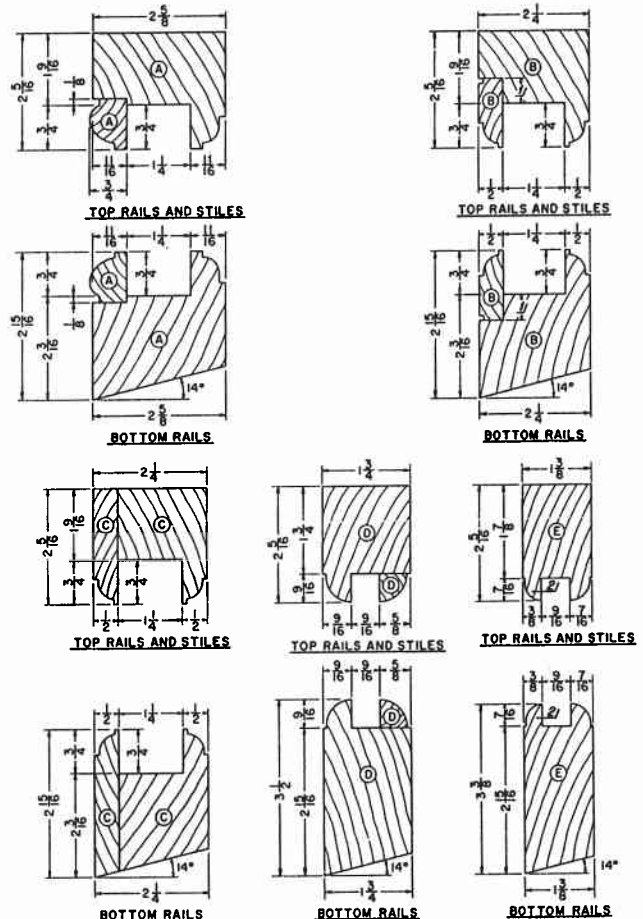


FIGURE 3. Details of $1\frac{3}{8}$ inch insulating glass window.
DETAILS NOT TO SCALE

4.3 MEASUREMENTS—The widths of all wood parts shown in the layouts herein, are face measurements. Overall widths for stiles, rails and check rails of $1\frac{1}{8}$ and $1\frac{3}{8}$ in. windows and sash glazed with single strength and double strength glass are a minimum of $\frac{3}{16}$ in. greater than face measurements; for bars and muntins, a minimum of $\frac{3}{8}$ in. greater. Overall widths for stiles and rails of $1\frac{3}{4}$ in. picture sash glazed with single strength and double strength glass are a minimum of $\frac{1}{4}$ in. greater than face measurements; for bars and muntins a minimum of $\frac{1}{2}$ in. greater.

4.4 STICKING PROFILES—Slight variations in profile of sash stickings are permitted among manufacturers under this standard provided that the glass rabbet is of the following minimum dimensions: $\frac{3}{16}$ in. deep by $\frac{1}{2}$ in. wide for $1\frac{3}{8}$ in. sash using single strength or double strength glass; according to minimum dimensions in figure 3 for $1\frac{3}{8}$ in. sash using insulating glass; according to minimum dimensions in figure 4 for $1\frac{3}{4}$, $2\frac{1}{4}$ and $2\frac{3}{8}$ in. sash using insulating glass; and $\frac{3}{16}$ in. deep and $\frac{3}{8}$ in. wide for storm sash.

Likewise, the bottom rails of all $1\frac{3}{8}$ in. check rail windows may, at the option of the manufacturer, be furnished plain beveled, as shown, or plowed or shaped in conformity with the manufacturer's regular shop practice. At the option of the manufacturer, the edges of the stiles and top rails of $1\frac{3}{8}$ in. check rail windows may be eased.



- 1/ THE DEPTH OF THE RABBIT IS OPTIONAL WITH THE MANUFACTURER, EXCEPT THAT IT SHALL NOT BE LESS THAN $\frac{1}{2}$ "
 - 2/ THIS SASH MAY HAVE SEPARATE STOPS INSTEAD OF SOLID STICKING.
- STATIONARY SASH SHALL BE MADE IN ACCORDANCE WITH EITHER OF THE ABOVE DETAILS, A, B, C, D, OR E AT THE OPTION OF THE MANUFACTURER.

FIGURE 4. Details of insulating glass stationary sash.
DETAILS NOT TO SCALE

4.5 SINGLE SASH—Only a few of the various types of single sash covered by this standard are shown in figure 2. For a complete listing of designs and sizes see Size Tables 17 through 25.

4.5.1 STORM SASH AND SCREENS—These items are made 1 in. greater in height than standard window opening heights. This extra height is needed to accommodate 14°-pitch solid-sill frames. When greater height is necessary, orders or specifications must so designate.

4.5.2 SCREENS—Details are shown for only 1½ in. full length screens. Screens are also available ¾ in. thick. At the option of the manufacturer all screens may be supplied with either a flush or raised molding.

5. STANDARD LAYOUTS AND OPENING SIZES

5.1 GENERAL—Tables 1 through 16 give the standard layouts, opening sizes, and single glass sizes for 1½ in. thick check rail and plain rail (double-hung) windows. Tables 17 through 25 give the same information for single glass sash. Tables 26 through 28 give the details for check rail (double hung) windows and for stationary sash (picture) using insulating glass. Tables 29 through 32 give the details on layout and sizes of wood screens for windows and sash.

5.2 MODULAR SIZES—The opening sizes for windows, sash and screens given herein, except for plain rail windows and for barn sash, are normally employed in structures of modular design, and were designed to meet the basic requirements of American Standards Association (ASA) Project A62, Basis of Coordination of Dimensions of Building Materials and Equipment,³ sponsored by the American Institute of Architects and the Producers' Council. The standard opening sizes of plain rail windows and barn sash

shown herein have been established in accordance with broad national usage.

5.3 The broad purpose of Project A62 is to secure maximum economies and simplification for the building industry through improved standardization. Since it is not practicable to standardize the finished building, this broad purpose is applied to building products and methods by the coordination of sizes for component building parts.

5.4 The basis for this coordination is a 4-inch increment applied to the sizes and assembly of parts and to the layout of buildings. The increment or module, applying to both vertical and horizontal dimensions, serves as the spacing for a uniform three-dimensioned grid to which the building layout and details are referenced.

5.5 The sizes and dimensions for coordination, while based on a 4-inch module or increment, are not necessarily multiples of 4 inches. Through the illustrations that follow it will be seen how the new standards for double-hung windows meet the requirements for coordination by being built to the following measurements:

Widths — multiples of 4 inches

Heights — multiples of 4 inches, plus 2 inches.

5.6 It will be observed from figures 5 and 6 that the grid opening is a multiple of 4 inches both in width and in height. To meet the requirements for coordination it is essential that the window and its frame be confined within a certain number of 4-inch increments or modules as indicated by the dotted grid lines. It will be noted that the standard window opening in all cases is 4 inches less in width and 6 inches less in height than the grid opening.

³ Copies of the latest edition of A62.1 are available for \$1.00 each from the American Standards Association, 10 East 40th St., New York, New York. 10016

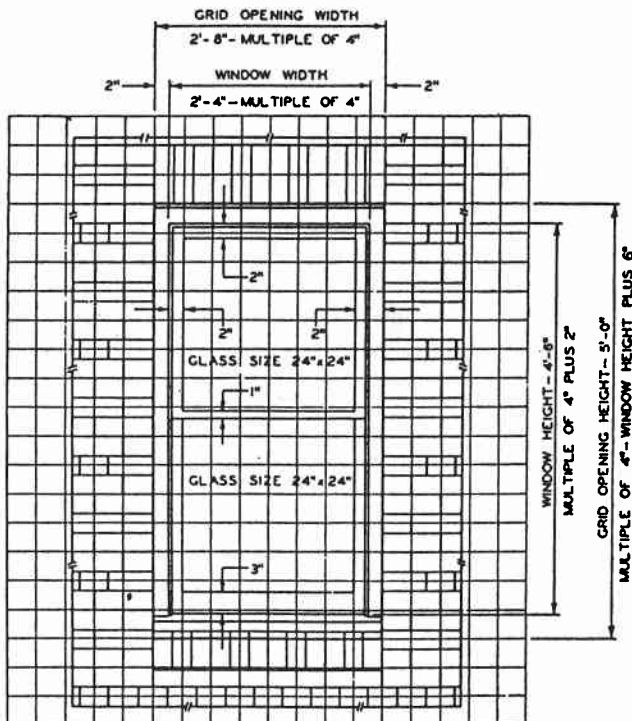


FIGURE 5. Relation of window (glazed-single glass) to grid opening — brick wall.

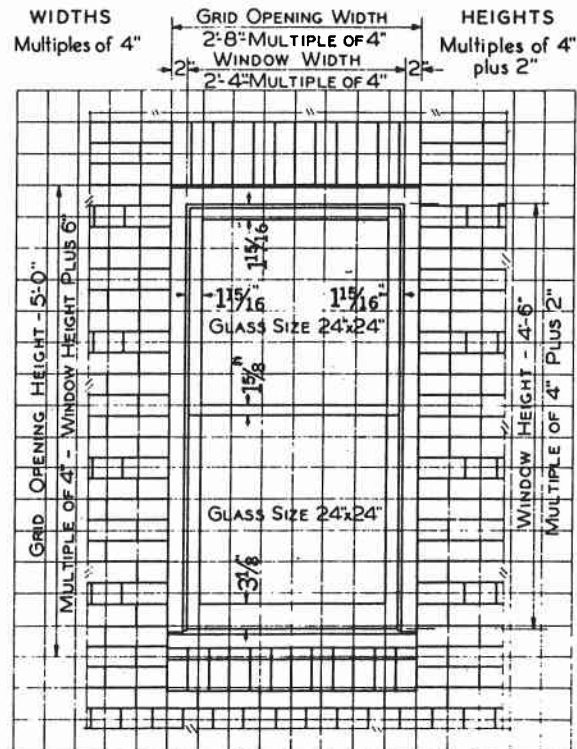


FIGURE 6. Relation of 1½ inch double hung insulating-glass window to grid opening — brick wall.

TABLE 1. Two-Light Check-Rail Windows, $1\frac{3}{8}$ inches Thick.

Prefit face measurements (in.) Stiles..... $1\frac{13}{32}$ Top rail..... $1\frac{13}{32}$ Bottom rail..... 3 Horizontal bar..... $\frac{7}{16}$ Check rail..... $1\frac{13}{32}$					
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
1-8X3-2	16X16	2-4X2-6	24X12	3-4X2-10	36X14
3-6	18	2-10	14	3-2	16
3-10	20	3-2	16	3-6	18
4-2	22	3-6	18	3-10	20
4-6	24	3-10	20	4-2	22
4-10	26	4-2	22	4-6	24
5-2	28	4-6	24	4-10	26
5-6	30	4-10	26	5-2	28
5-10	32	5-2	28	5-6	30
		5-6	30	5-10	32
		5-10	32		
2-0X2-6	20X12				
2-10	14				
3-2	16	2-8X2-10	28X14	3-8X3-6	40X18
3-6	18	3-2	16	3-10	20
3-10	20	3-6	18	4-2	22
4-2	22	3-10	20	4-6	24
4-6	24	4-2	22	4-10	26
4-10	26	4-6	24	5-2	28
5-2	28	4-10	26	5-6	30
5-6	30	5-2	28	5-10	32
5-10	32	5-6	30		
		5-10	32		
		3-0X2-10	32X14		
		3-2	16		
		3-6	18		
		3-10	20		
		4-2	22		
		4-6	24		
		4-10	26		
		5-2	28		
		5-6	30		
		5-10	32		

NOTE — Windows are made $\frac{1}{8}$ in. narrower and $\frac{1}{16}$ in. shorter than the opening sizes listed.

TABLE 3. Four-Light-High Check Rail Windows, $1\frac{3}{8}$ inches Thick.

Prefit face measurements (in.) Stiles..... $1\frac{13}{32}$ Top rail..... $1\frac{13}{32}$ Bottom rail..... 3 Horizontal bar..... $\frac{7}{16}$ Check rail..... $1\frac{13}{32}$					
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
1-8X3-2	16X7 $\frac{1}{2}$	2-4X2-6	24X5 $\frac{1}{2}$	3-4X2-10	36X5 $\frac{1}{2}$
3-6	8 $\frac{1}{2}$	2-10	6 $\frac{1}{2}$	3-2	7 $\frac{1}{2}$
3-10	9 $\frac{1}{2}$	3-2	7 $\frac{1}{2}$	3-6	8 $\frac{1}{2}$
4-2	10 $\frac{1}{2}$	3-6	8 $\frac{1}{2}$	3-10	9 $\frac{1}{2}$
4-6	11 $\frac{1}{2}$	3-10	9 $\frac{1}{2}$	4-2	10 $\frac{1}{2}$
4-10	12 $\frac{1}{2}$	4-2	10 $\frac{1}{2}$	4-6	11 $\frac{1}{2}$
5-2	13 $\frac{1}{2}$	4-6	11 $\frac{1}{2}$	4-10	12 $\frac{1}{2}$
5-6	14 $\frac{1}{2}$	4-10	12 $\frac{1}{2}$	5-2	13 $\frac{1}{2}$
5-10	15 $\frac{1}{2}$	5-2	13 $\frac{1}{2}$	5-6	14 $\frac{1}{2}$
		5-6	14 $\frac{1}{2}$	5-10	15 $\frac{1}{2}$
		5-10	15 $\frac{1}{2}$		
2-0X2-6	20X5 $\frac{1}{2}$				
2-10	6 $\frac{1}{2}$				
3-2	7 $\frac{1}{2}$	2-8X2-10	28X6 $\frac{1}{2}$	3-8X3-6	40X8 $\frac{1}{2}$
3-6	8 $\frac{1}{2}$	3-2	7 $\frac{1}{2}$	3-10	9 $\frac{1}{2}$
3-10	9 $\frac{1}{2}$	3-6	8 $\frac{1}{2}$	4-2	10 $\frac{1}{2}$
4-2	10 $\frac{1}{2}$	3-10	9 $\frac{1}{2}$	4-6	11 $\frac{1}{2}$
4-6	11 $\frac{1}{2}$	4-2	10 $\frac{1}{2}$	4-10	12 $\frac{1}{2}$
4-10	12 $\frac{1}{2}$	4-6	11 $\frac{1}{2}$	5-2	13 $\frac{1}{2}$
5-2	13 $\frac{1}{2}$	4-10	12 $\frac{1}{2}$	5-6	14 $\frac{1}{2}$
5-6	14 $\frac{1}{2}$	5-2	13 $\frac{1}{2}$	5-10	15 $\frac{1}{2}$
5-10	15 $\frac{1}{2}$	5-6	14 $\frac{1}{2}$		
		5-10	15 $\frac{1}{2}$		
		3-0X2-10	32X6 $\frac{1}{2}$		
		3-2	7 $\frac{1}{2}$		
		3-6	8 $\frac{1}{2}$		
		3-10	9 $\frac{1}{2}$		
		4-2	10 $\frac{1}{2}$		
		4-6	11 $\frac{1}{2}$		
		4-10	12 $\frac{1}{2}$		
		5-2	13 $\frac{1}{2}$		
		5-6	14 $\frac{1}{2}$		
		5-10	15 $\frac{1}{2}$		

NOTE — Windows are made $\frac{1}{8}$ in. narrower and $\frac{1}{32}$ in. shorter than the opening sizes listed.

TABLE 2. Four-Light, Two Wide, Check Rail Windows, $1\frac{3}{8}$ inches Thick.

Prefit face measurements (in.) Stiles..... $1\frac{13}{32}$ Top rail..... $1\frac{13}{32}$ Bottom rail..... 3 Vertical bar..... $\frac{7}{16}$ Check rail..... $1\frac{13}{32}$					
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
2-0X3-2	10X16			3-0X4-10	16X26
3-6	18			5-2	28
3-10	20	2-8X3-2	14X16	5-6	30
4-2	22	3-6	18	5-10	32
4-6	24	3-10	20		
4-10	26	4-2	22		
5-2	28	4-6	24		
5-6	30	4-10	26		
		5-2	28		
		5-6	30		
		5-10	32		
2-4X3-2	12X16			3-4X3-2	18X16
3-6	18			3-6	18
3-10	20			3-10	20
4-2	22			4-2	22
4-6	24			4-6	24
4-10	26			4-10	26
5-2	28			5-2	28
5-6	30			5-6	30
5-10	32			5-10	32
		3-0X3-2	16X16		
		3-6	18		
		3-10	20		
		4-2	22		
		4-6	24		

NOTE — Windows are made $\frac{1}{8}$ in. narrower and $\frac{1}{32}$ in. shorter than the opening sizes listed.

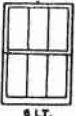
TABLE 4. Top Three-Light-Wide Check Rail Windows, $1\frac{3}{8}$ inches Thick.

Prefit face measurements (in.) Stiles..... $1\frac{13}{32}$ Top rail..... $1\frac{13}{32}$ Bottom rail..... 3 Vertical bar..... $\frac{7}{16}$ Check rail..... $1\frac{13}{32}$					
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
2-0X2-6	6 $\frac{1}{2}$ X12	2-4X2-6	7 $\frac{1}{2}$ X12	2-8X2-10	9 $\frac{1}{2}$ X14
2-10	14	2-10	14	3-2	16
3-2	16	3-2	16	3-6	18
3-6	18	3-6	18	3-10	20
3-10	20	3-10	20	4-2	22
4-2	22	4-2	22	4-6	24
4-6	24	4-6	24	4-10	26
4-10	26	4-10	26	5-2	28
5-2	28	5-2	28	5-6	30
5-6	30	5-6	30	5-10	32
5-10	32	5-10	32		

NOTE — Windows are made $\frac{1}{8}$ in. narrower and $\frac{1}{32}$ in. shorter than the opening sizes listed.

TABLE 5. Six-Light, Three-Wide Check Rail Windows, $1\frac{3}{8}$ inches Thick.

Prefit face measurements (in.)					
Stiles.....					$1\frac{3}{4}$
Top rail.....					$1\frac{3}{4}$
Bottom rail.....					3
Vertical bar.....					$\frac{3}{4}$
Check rail.....					$1\frac{3}{4}$



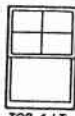
6 L.T.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
2-4×2-6	8×12	2-8×3-2	9 $\frac{1}{4}$ ×16	3-0×3-2	10 $\frac{3}{4}$ ×16
2-8×2-10	9 $\frac{1}{4}$ ×14	3-0×2-10	10 $\frac{3}{4}$ ×14	3-6	18

NOTE — Windows are made $\frac{1}{8}$ in. narrower and $\frac{1}{32}$ in. shorter than the opening sizes listed.

TABLE 6. Top Four-Light Check Rail Windows, $1\frac{3}{8}$ inches Thick.

Prefit face measurements (in.)			
Stiles.....			$1\frac{3}{4}$
Top rail.....			$1\frac{3}{4}$
Bottom rail.....			3
Vertical bar.....			$\frac{3}{4}$
Muntin.....			$\frac{3}{4}$
Check rail.....			$1\frac{3}{4}$




4 L.T.

Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
1-8×3-2	7 $\frac{3}{4}$ ×8	1-8×4-6	7 $\frac{3}{4}$ ×12
3-6	9	4-10	13
3-10	10	5-2	14
4-2	11	5-6	15
		5-10	16

NOTE — Windows are made $\frac{1}{8}$ in. narrower and $\frac{1}{32}$ in. shorter than the opening sizes listed.

TABLE 7. Top Four-Light-Wide Check Rail Windows, $1\frac{3}{8}$ inches Thick.

Prefit face measurements (in.)					
Stiles.....					$1\frac{3}{4}$
Top rail.....					$1\frac{3}{4}$
Bottom rail.....					3
Vertical bar.....					$\frac{3}{4}$
Check rail.....					$1\frac{3}{4}$



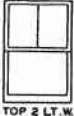
4 L.T.W.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
3-0×2-10	7 $\frac{3}{4}$ ×14	3-4×3-10	8 $\frac{1}{4}$ ×20	3-8×5-6	9 $\frac{1}{4}$ ×30
3-2	16	4-2	22	5-10	32
3-6	18	4-6	24		
3-10	20	4-10	26		
4-2	22	5-2	28		
4-6	24	5-6	30		
4-10	26	5-10	32		
5-2	28				
5-6	30				
5-10	32				
		3-8×3-6	9 $\frac{1}{4}$ ×18		
		3-10	20		
		4-2	22		
		4-6	24		
		4-10	26		
		5-2	28		
3-4×2-10	8 $\frac{1}{4}$ ×14				
3-2	16				
3-6	18				

NOTE — Windows are made $\frac{1}{8}$ in. narrower and $\frac{1}{32}$ in. shorter than the opening sizes listed.

TABLE 8. Top Two-Light Wide Check Rail Windows, $1\frac{3}{8}$ inches Thick.

Prefit face measurements (in.)			
Stiles.....			$1\frac{3}{4}$
Top rail.....			$1\frac{3}{4}$
Bottom rail.....			3
Vertical bar.....			$\frac{3}{4}$
Check rail.....			$1\frac{3}{4}$



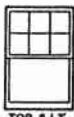
2 L.T.W.

Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
1-8×3-2	7 $\frac{3}{4}$ ×16	1-8×4-6	7 $\frac{3}{4}$ ×24
3-6	18	4-10	26
3-10	20	5-2	28
4-2	22	5-6	30
		5-10	32

NOTE — Windows are made $\frac{1}{8}$ in. narrower and $\frac{1}{32}$ in. shorter than the opening sizes listed.

TABLE 9. Top Six-Light, Three-Wide Check Rail Windows, $1\frac{3}{8}$ inches Thick.

Prefit face measurements (in.)					
Stiles.....					$1\frac{3}{4}$
Top rail.....					$1\frac{3}{4}$
Bottom rail.....					3
Vertical bar.....					$\frac{3}{4}$
Muntin.....					$\frac{3}{4}$
Check rail.....					$1\frac{3}{4}$




6 L.T.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
2-0×2-6	6 $\frac{1}{4}$ ×6	2-4×2-6	7 $\frac{3}{4}$ ×6	2-8×2-10	9 $\frac{1}{4}$ ×7
2-10	7	3-2	7	3-2	8
3-2	8	3-6	8	3-6	9
3-6	9	3-10	10	3-10	10
3-10	10	4-2	11	4-2	11
4-2	11	4-6	12	4-6	12
4-6	12	4-10	13	4-10	13
4-10	13	5-2	14	5-2	14
5-2	14	5-6	15	5-6	15
5-6	15	5-10	16	5-10	16
5-10	16				

NOTE — Windows are made $\frac{1}{8}$ in. narrower and $\frac{1}{32}$ in. shorter than the opening sizes listed.

TABLE 10. Top Eight-Light, Four-Wide Check Rail Windows, $1\frac{3}{8}$ inches Thick.

Prefit face measurements (in.)					
Stiles.....					$1\frac{3}{4}$
Top rail.....					$1\frac{3}{4}$
Bottom rail.....					3
Vertical bar.....					$\frac{3}{4}$
Muntin.....					$\frac{3}{4}$
Check rail.....					$1\frac{3}{4}$



8 L.T.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
3-0×2-10	7 $\frac{3}{4}$ ×7	3-4×3-10	8 $\frac{1}{4}$ ×10	3-8×5-6	9 $\frac{1}{4}$ ×15
3-2	8	4-2	11	5-10	16
3-6	9	4-6	12		
3-10	10	4-10	13		
4-2	11	5-2	14		
4-6	12	5-6	15		
4-10	13	5-10	16		
5-2	14				
5-6	15				
5-10	16				
		3-8×3-6	9 $\frac{1}{4}$ ×9		
		3-10	10		
		4-2	11		
		4-6	12		
		4-10	13		
		5-2	14		
3-4×2-10	8 $\frac{1}{4}$ ×7				
3-2	8				
3-6	9				

NOTE — Windows are made $\frac{1}{8}$ in. narrower and $\frac{1}{32}$ in. shorter than the opening sizes listed.

TABLE 11. Eight-Light, Four-Over Four Check Rail Windows, 1 3/8 inches Thick.

Prefit face measurements (in.)					
Stiles.....	12 1/2				
Top rail.....	12 1/2				
Bottom rail.....	2 3/4				
Vertical bar.....	3 1/4				
Muntin.....	3 1/4				
Check rail.....	1 3/2				

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
1-8X3-2	8X8	2-0X3-2	10X8	2-0X5-10	10X16
3-4	9	3-4	9		
3-10	10	3-10	10	2-4X4-6	12X12
4-2	11	4-2	11	5-2	14
4-6	12	4-6	12	5-10	16
4-10	13	4-10	13		
5-2	14	5-2	14	2-8X5-10	14X16
		5-6	15		

NOTE — Windows are made 1/4 in. narrower and 1/32 in. shorter than the opening sizes listed.

TABLE 12. Sixteen-Light, Eight-Over-Eight Check Rail Windows, 1 3/8 inches Thick.

Prefit face measurements (in.)					
Stiles.....	12 1/2				
Top rail.....	12 1/2				
Bottom rail.....	2 3/4				
Vertical bar.....	3 1/4				
Muntin.....	3 1/4				
Check rail.....	1 3/2				

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
3-0X3-2	7 1/2X8	3-4X4-6	8 1/2X12	3-8X5-2	9 1/2X14
3-10	10	4-10	13	5-6	15
4-6	12	5-2	14	5-10	16
4-10	13				
5-2	14	3-8X3-10	9 1/2X10		
3-4X3-2	8 1/2X8	4-6	13		
3-6	9	4-10	13		
3-10	10				

NOTE — Windows are made 1/4 in. narrower and 1/32 in. shorter than the opening sizes listed.

TABLE 13. Twelve-Light, Six-Over-Six, Check Rail Windows, 1 3/8 inches Thick.

Prefit face measurements (in.)					
Stiles.....	12 1/2				
Top rail.....	12 1/2				
Bottom rail.....	2 3/4				
Vertical bar.....	3 1/4				
Muntin.....	3 1/4				
Check rail.....	1 3/2				

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
2-0X3-2	6 1/2X8	2-4X4-10	8X13	3-0X2-10	10 1/2X7
3-6	9	5-2	14	3-2	8
3-10	10	5-6	15	3-6	9
4-2	11			3-10	10
4-6	12	2-8X2-10	9 1/2X7	4-2	11
4-10	13	3-2	8	4-6	12
5-2	14	3-6	9	4-10	13
5-6	15	3-10	10	5-2	14
		4-2	11	5-6	15
2-4X2-10	8X7	4-6	12	5-10	16
3-2	8	4-10	13		
3-6	9	5-2	14		
3-10	10	5-6	15	3-4X4-6	12X12
4-2	11	5-10	16	5-2	14
4-6	12			5-10	16

NOTE — Windows are made 1/4 in. narrower and 1/32 in. shorter than the opening sizes listed.

TABLE 14. Cottage, Two-Light Check Rail Windows, 1 3/8 inches Thick.

Prefit face measurements (in.)			
Stiles.....	12 1/2		
Top rail.....	12 1/2		
Bottom rail.....	3		
Check rail.....	1 3/2		

Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
3-4X4-10	36X16 & 36	3-8X5-10	40X16 & 48
5-2	16 & 40		
3-8X4-6	40X14 & 34		
4-10	16 & 36		
5-2	16 & 40		
5-6	16 & 44		

NOTE — Windows are made 1/4 in. narrower and 1/32 in. shorter than the opening sizes listed.

TABLE 15. Fifteen to Twenty-Four-Light Check Rail Windows, 1 3/8 inches Thick.

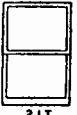
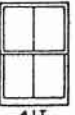
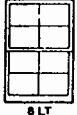
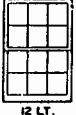
Prefit face measurements (in.)				
	15-LIGHT WINDOWS	18-LIGHT WINDOWS	20-LIGHT WINDOWS	24-LIGHT WINDOWS
Stiles.....	12 1/2	12 1/2	12 1/2	12 1/2
Top rail.....	12 1/2	12 1/2	12 1/2	12 1/2
Bottom rail.....	3	3	3	3
Vertical bar.....	3 1/4	3 1/4	3 1/4	3 1/4
Muntin.....	3 1/4	3 1/4	3 1/4	3 1/4
Check rail.....	1 3/2	1 3/2	1 3/2	1 3/2

Opening sizes	Glass sizes	Glass sizes	Glass sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>in.</i>	<i>in.</i>	<i>in.</i>
2-4X4-10	8X10 1/4	8X9 1/4		
5-6	11 3/4			
2-8X5-6	9 1/2X11 3/4			
6-6		9 1/2X11 3/4		
3-0X4-10	10 1/2X11 3/4		7 1/2X10 1/4	7 1/2X9 1/4
5-6			11 3/4	
3-4X5-6	12X11 3/4		8 1/2X11 3/4	
3-8X5-6		9 1/2X11 3/4		9 1/2X11 3/4
6-6				
4-4X6-6				11 3/4X11 3/4

NOTE — Windows are made 1/4 in. narrower and 1/32 in. shorter than the opening sizes listed.

TABLE 16. Two-to-Twelve-Light, Plain Rail (Double-Hung) Windows, 1 1/8 inches Thick.

Predit face measurements (in.)				
Stiles.....	1 3/8	1 3/8	1 3/8	1 3/8
Top rail.....	2 3/8	2 3/8	2 3/8	2 3/8
Bottom rail.....	2 3/8	2 3/8	2 3/8	2 3/8
Middle rail.....	1 3/8	1 3/8	1 3/8	1 3/8
Vertical bar.....	3/8	3/8	3/8	3/8
Muntin.....				

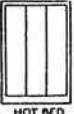
			
2 LT.	4 LT.	6 LT.	12 LT.

Opening sizes	Glass sizes			
ft and in.	in.	in.	in.	in.
1-8 1/2 x 3-10	8 x 10	.....
4-6	12	.....
1-10 1/2 x 4-6	9 x 12	.....
2-0 x 3-10	20 x 20	10 x 20	.....	.....
4-6	24	.....	.....	.....
4-10	26	.....	.....	.....
2-0 1/2 x 4-6	10 x 12	.....
5-2	14	.....
5-10	16	.....
6-6	18	.....
2-1 x 3-6	7 x 9	.....
2-4 x 3-2	8 x 8	.....
3-6	9	.....
3-10	24 x 20	12 x 20	.....	.....
4-6	24	24	12	.....
4-10	26	26	14	.....
5-2	28	28	.....	.....
5-6	30	.....	.....	.....
2-4 1/2 x 5-2	12 x 14	.....
5-10	16	.....
6-6	18	.....
2-4 1/2 x 5-7 1/2
6-7 1/2
2-7 x 4-6	9 x 12	.....
5-2	14	.....
2-8 x 3-10	14 x 20	.....	.....
4-6	24	.....	.....
4-10	26	.....	.....
5-2	28	.....	.....
2-8 1/2 x 5-10	14 x 16	.....
6-6	18	.....
2-10 x 4-6	10 x 12	.....
5-2	14	.....
5-10	16	.....
6-6	18	.....
2-10 1/2 x 6-7 1/2
7-7 1/2
3-4 x 5-2	12 x 14	.....
5-10	16	.....
6-6	18	.....
3-4 1/2 x 6-7 1/2

NOTE — Windows are made 1/8 in. narrower and 1/16 in. shorter than the opening sizes listed.

TABLE 17. Hotbed Sash, 1 3/8 and 1 3/4 inches Thick.

Predit face measurements (in.)	
Stiles.....	1 3/8
Top rail.....	1 3/8
Bottom rail.....	3
Vertical bar.....	Varies
Hardwood cross bar.....	

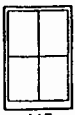

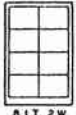

HOT BED

Opening sizes	Glass sizes
ft. and in.	
3-0 x 4-0	3 rows—10 in.
6-0	3 rows—10 in.
6-0	4 rows—7 in.
3-4 x 6-0	4 rows—8 in.
4-0 x 6-0	5 rows—8 in.

NOTE — Sash are made 1/8 in. narrower and 1/32 in. shorter than the opening sizes listed.

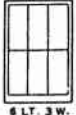
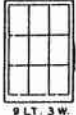
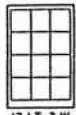
TABLE 18. Barn or Utility Sash, 1 1/8 and 1 3/8 inches Thick.

Predit face measurements (in.)					
Stiles.....	1 3/8	Vertical bar.....	3/8		
Top rail.....	1 3/8	Muntin.....	3/8		
Bottom rail.....	3				

		
4 LT.	6 LT. 2 W.	8 LT. 2 W.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	in.	ft and in.	in.	ft and in.	in.
1-4 x 1-9	6 x 8	1-4 x 2-5 1/4	6 x 8	1-4 x 3-1 1/4	6 x 8
2-5	10	2-11 1/4	10	3-0 1/2	10
1-8 x 2-1	8 x 10	1-8 x 2-11 1/4	8 x 10	1-8 x 3-9 1/4	8 x 10
2-5	12	3-5 1/4	12	4-5 1/4	12
2-9	14	3-11 1/4	14	5-1 1/4	14
3-1	16	4-5 1/4	16	5-9 1/4	16
1-10 x 2-5	9 x 12	1-10 x 3-5 1/4	9 x 12	2-0 x 4-5 1/4	10 x 12
2-9	14	3-11 1/4	14	5-1 1/4	14
3-1	16	4-5 1/4	16	5-9 1/4	16
2-0 x 2-1	10 x 10	2-0 x 3-5 1/4	10 x 12	2-4 x 4-5 1/4	12 x 12
2-5	12	3-11 1/4	14	5-1 1/4	14
2-9	14	4-2 1/4	15	5-9 1/4	16
2-11	15	4-5 1/4	16	2-8 x 5-0 1/2	14 x 16
3-1	16	4-11 1/4	18		
3-5	18				
2-4 x 2-5	12 x 12	2-4 x 3-11 1/4	12 x 14		
2-9	14	4-5 1/4	16		
3-1	16	4-11 1/4	18		
3-5	18				

Predit face measurements (in.)					
Stiles.....	1 3/8	Vertical bar.....	3/8		
Top rail.....	1 3/8	Muntin.....	3/8		
Bottom rail.....	3				




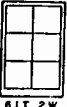



		
6 LT. 3 W.	9 LT. 3 W.	12 LT. 3 W.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	in.	ft and in.	in.	ft and in.	in.
2-1 x 1-11	7 x 9	2-0 x 2-8 1/4	6 1/2 x 9	2-0 x 3-5 1/2	8 x 10
2-4 x 2-1	8 x 10	2-4 x 2-11 1/4	8 x 10	2-4 x 3-9 1/4	8 x 10
2-5	12	3-5 1/4	12	4-5 1/4	12
2-9	14	3-11 1/4	14	5-1 1/4	14
3-1	16	4-5 1/4	16	5-9 1/4	16
2-7 x 2-5	9 x 12	2-8 x 3-5 1/4	9 1/2 x 12	2-8 x 4-5 1/4	9 1/2 x 12
2-9	14	3-8 1/4	13	4-9 1/4	13
3-1	16	3-11 1/4	14	5-1 1/4	14
		4-2 1/4	15	5-5 1/4	15
2-10 x 2-5	10 x 12	4-5 1/4	16	5-9 1/4	16
2-9	14	4-11 1/4	18		
3-1	16				
3-4 x 2-5	12 x 12	3-0 x 2-11 1/4	10 1/2 x 10	3-0 x 3-9 1/4	10 1/2 x 10
2-9	14	3-5 1/4	12	4-5 1/4	12
3-1	16	3-11 1/4	14	5-1 1/4	14
3-5	18	4-2 1/4	15	5-5 1/4	15
		4-5 1/4	16	5-9 1/4	16
		4-11 1/4	18		
		3-4 x 3-5 1/4	12 x 12	3-4 x 4-5 1/4	12 x 12
		3-11 1/4	14	5-1 1/4	14
		4-5 1/4	16	5-9 1/4	16
		4-11 1/4	18		

NOTE — Windows are made 1/8 in. narrower and 1/32 in. shorter than the opening sizes listed.

TABLE 19. Casement Sash, 1 3/8 inches Thick.

Prefit face measurements (in.)							
Stiles.....	1 1/2	Vertical bar.....		3/8			
Top rail.....	1 3/4	Muntin.....		3/8			
Bottom rail.....	3						

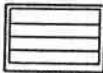
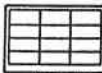
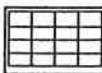
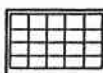
						
1 LT.	3 LT. HIGH	4 LT. HIGH	6 LT. 2 W.	8 LT. 2 W.	10 LT. 2 W.	12 LT. 3 W.

Opening sizes	Glass sizes						
ft and in.	in.	in.	in.	in.	in.	in.	in.
0-11 1/2 x 2-6	8 x 25	8 x 8 1/2	8 x 8 1/2	.....	.....	.....	.....
2-10	29	9 1/2	7 1/2	.....	.....	.....	.....
3-2	33	10 1/2	8 1/2	.....	.....	.....	.....
3-6	37	12 1/2	9 1/2	.....	.....	.....	.....
3-10	41	13 1/2	10 1/2	.....	.....	.....	.....
4-2	45	14 1/2	11 1/2	.....	.....	.....	.....
4-6	49	16 1/2	12 1/2	.....	.....	.....	.....
4-10	53	17 1/2	13 1/2	.....	.....	.....	.....
5-2	57	18 1/2	14 1/2	.....	.....	.....	.....
1-3 1/2 x 2-6	12 x 25	12 x 8 1/2	12 x 8 1/2	5 3/4 x 8 1/2	5 3/4 x 8 1/2	.....	.....
2-10	29	9 1/2	7 1/2	7 1/4	7 1/4	.....	.....
3-2	33	10 1/2	8 1/2	10 1/4	10 1/4	.....	.....
3-6	37	12 1/2	9 1/2	12 1/4	12 1/4	.....	.....
3-10	41	13 1/2	10 1/2	13 1/4	13 1/4	.....	.....
4-2	45	14 1/2	11 1/2	14 1/4	14 1/4	.....	.....
4-6	49	16 1/2	12 1/2	16 1/4	16 1/4	.....	.....
4-10	53	17 1/2	13 1/2	17 1/4	17 1/4	.....	.....
5-2	57	18 1/2	14 1/2	18 1/4	18 1/4	.....	.....
1-7 1/2 x 2-6	16 x 25	16 x 8 1/2	16 x 8 1/2	7 3/4 x 8 1/2	7 3/4 x 8 1/2	.....	.....
2-10	29	9 1/2	7 1/2	9 1/4	9 1/4	.....	.....
3-2	33	10 1/2	8 1/2	10 3/4	10 3/4	.....	.....
3-6	37	12 1/2	9 1/2	12 3/4	12 3/4	.....	.....
3-10	41	13 1/2	10 1/2	13 3/4	13 3/4	.....	.....
4-2	45	14 1/2	11 1/2	14 3/4	14 3/4	.....	.....
4-6	49	16 1/2	12 1/2	16 3/4	16 3/4	.....	.....
4-10	53	17 1/2	13 1/2	17 3/4	17 3/4	.....	.....
5-2	57	18 1/2	14 1/2	18 3/4	18 3/4	.....	.....
1-11 1/2 x 2-6	20 x 25	20 x 8 1/2	20 x 8 1/2	9 3/4 x 8 1/2	9 3/4 x 8 1/2	.....	.....
2-10	29	9 1/2	7 1/2	9 1/4	9 1/4	.....	.....
3-2	33	10 1/2	8 1/2	10 3/4	10 3/4	.....	.....
3-6	37	12 1/2	9 1/2	12 3/4	12 3/4	.....	.....
3-10	41	13 1/2	10 1/2	13 3/4	13 3/4	.....	.....
4-2	45	14 1/2	11 1/2	14 3/4	14 3/4	.....	.....
4-6	49	16 1/2	12 1/2	16 3/4	16 3/4	.....	.....
4-10	53	17 1/2	13 1/2	17 3/4	17 3/4	.....	.....
5-2	57	18 1/2	14 1/2	18 3/4	18 3/4	.....	.....
2-3 1/2 x 2-6	24 x 25	24 x 8 1/2	24 x 8 1/2	11 3/4 x 8 1/2	11 3/4 x 8 1/2	.....	.....
3-10	29	9 1/2	7 1/2	11 1/4	11 1/4	.....	.....
3-2	33	10 1/2	8 1/2	10 3/4	10 3/4	.....	.....
3-6	37	12 1/2	9 1/2	12 3/4	12 3/4	.....	.....
3-10	41	13 1/2	10 1/2	13 3/4	13 3/4	.....	.....
4-2	45	14 1/2	11 1/2	14 3/4	14 3/4	.....	.....
4-6	49	16 1/2	12 1/2	16 3/4	16 3/4	.....	.....
4-10	53	17 1/2	13 1/2	17 3/4	17 3/4	.....	.....
5-2	57	18 1/2	14 1/2	18 3/4	18 3/4	.....	.....

NOTE — Sash are made 1/8 in. narrower and 1/32 in. shorter than the opening sizes listed. Certain modifications in size may be necessary for modular coordination, depending upon the type and design of frame used.

TABLE 20. Picture Sash, 1 3/4 inches Thick.

Prefit face measurements (in.)			
Stiles.....	1 3/4	Bottom rail.....	2 3/4
Top rail.....	1 3/4	Bars and muntins.....	3/4

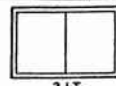
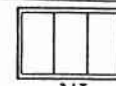
			
4 HORIZ. L.T.S.	12 LT. 3 W.	16 LT. 4 W.	20 LT. 5 W.

Opening sizes	Glass sizes			
ft and in.	in.	in.	in.	in.
4-4 x 4-6	48 x 12	15 1/4 x 12	11 3/4 x 12	.....
5-2	14	14	14	.....
5-0 x 4-6	56 x 12	.....	13 3/4 x 12	10 1/4 x 12
5-2	14	.....	14	14
5-8 x 4-6	.....	.....	16 1/4 x 12	12 1/4 x 12
5-2	.....	.....	14	14

NOTE — Sash are made 1/8 in. narrower and 1/32 in. shorter than the opening sizes listed.

TABLE 21. Cellar Sash, 1 1/8 and 1 3/8 inches Thick.

Prefit face measurements (in.)			
Stiles.....	1 1/8	1 3/8	.....
Top rail.....	1 1/8	1 3/8	.....
Bottom rail.....	1 1/8	1 3/8	.....
Vertical bar.....	3/8	3/8	.....

	
2 LT.	3 LT.

Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	in.	ft and in.	in.
1-8 x 1-4	8 x 12	2-0 x 1-0	6 1/2 x 8
2-0 x 1-4	10 x 12	2-4 x 1-4	8 x 12
1-8	16	1-8	12
2-0	20	2-8 x 1-0	9 1/2 x 8
2-4 x 1-4	12 x 12	1-4	12
1-8	16	1-8	16
2-0	20	2-0	20
2-8 x 1-4	14 x 12	3-0 x 1-4	10 1/2 x 12
1-8	16	1-8	16
2-0	20	2-0	20
2-4 x 1-4	.....	1-8	12 x 12
.....	.....	1-8	16
.....	.....	2-4	20
.....	.....	2-4	24

NOTE — Sash are made 1/8 in. narrower and 1/8 in. shorter than the opening sizes listed.

TABLE 22. One-Light Sash, 1 3/8 inches Thick.

Prefit face measurements (in.)

1 LT.

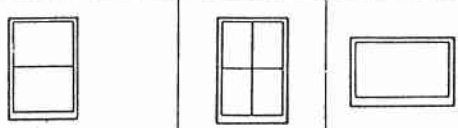
Stiles..... 1 3/8
Top rail..... 1 3/8
Bottom rail..... 3

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
1-8 x 1-10	16 x 17	2-8 x 1-10	28 x 17	3-8 x 2-6	40 x 25
2-2	21	2-2	21	2-10	29
2-6	25	2-6	25	3-2	33
2-0 x 1-10	20 x 17	2-10	29	3-6	37
2-2	21	3-2	33	3-10	41
2-6	25	3-6	37	4-6	49
2-10	29	3-0 x 1-10	32 x 17	5-2	57
3-2	33	2-2	21		
3-6	37	2-6	25	4-0 x 2-6	44 x 25
2-4 x 1-10	24 x 17	2-10	29	2-10	29
2-2	21	3-2	33	3-2	33
2-6	25	3-6	37	3-6	37
2-10	29			3-10	41
3-2	33	3-4 x 1-10	36 x 17	4-6	49
3-6	37	2-2	21	5-2	57
		2-6	25		
		2-10	29		
		3-2	33	4-4 x 4-6	48 x 49
		3-6	37	5-0 x 4-6	56 x 49
		3-10	41	5-2	57
		4-6	49		

NOTE — Sash are made 1/8 in. narrower and 1/32 in. shorter than the opening sizes listed.

TABLE 23. Storm Sash, 1½ inches Thick.

Profit face measurements (in.)			
Stiles.....	129½	129½	129½
Top rail.....	129½	129½	129½
Bottom rail.....	4½	4½	4½
Center rail.....	¾	¾	¾
Vertical bar.....	.....	¾	.....



Opening sizes	Glass sizes		
ft and in.	in.	in.	in.
1-8×1-10	.....	.....	10×17
2-2	.....	.....	21
2-6	.....	.....	25
2-10	16×16	.....	.....
3-2	18	.....	.....
3-6	18	.....	.....
3-10	20	.....	.....
4-2	22	.....	.....
4-6	24	.....	.....
4-10	26	.....	.....
5-2	28	.....	.....
5-6	30	.....	.....
5-10	32	.....	.....
2-0×1-10	.....	.....	20×17
2-2	.....	.....	21
2-6	20×12	.....	25
2-10	14	.....	29
3-2	16	10×16	33
3-6	18	18	37
3-10	20	20	.....
4-2	22	22	.....
4-6	24	24	.....
4-10	26	26	.....
5-2	28	28	.....
5-6	30	30	.....
5-10	32	.....	.....
2-4×1-10	.....	.....	24×17
2-2	.....	.....	21
2-6	24×12	.....	25
2-10	14	.....	29
3-2	16	12×16	33
3-6	18	18	37
3-10	20	20	.....
4-2	22	22	.....
4-6	24	24	.....
4-10	26	26	.....
5-2	28	28	.....
5-6	30	30	.....
5-10	32	32	.....

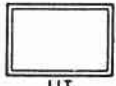
TABLE 23. Storm Sash, 1½ inches Thick.

Opening sizes	Glass sizes		
ft and in.	in.	in.	in.
2-8×1-10	.....	.....	28×17
2-2	.....	.....	21
2-6	.....	.....	25
2-10	28×14	.....	29
3-2	16	14×16	33
3-6	18	18	37
3-10	20	20	.....
4-2	22	22	.....
4-6	24	24	.....
4-10	26	26	.....
5-2	28	28	.....
5-6	30	30	.....
5-10	32	32	.....
3-0×1-10	.....	.....	32×17
2-2	.....	.....	21
2-6	.....	.....	25
2-10	32×14	.....	29
3-2	16	16×16	33
3-6	18	18	37
3-10	20	20	.....
4-2	22	22	.....
4-6	24	24	.....
4-10	26	26	.....
5-2	28	28	.....
5-6	30	30	.....
5-10	32	32	.....
3-4×1-10	.....	.....	36×17
2-2	.....	.....	21
2-6	.....	.....	25
2-10	36×14	.....	29
3-2	16	18×16	33
3-6	18	18	37
3-10	20	20	41
4-2	22	22	.....
4-6	24	24	36×40
4-10	26	26	.....
5-2	28	28	.....
5-6	30	30	.....
5-10	32	32	.....
3-8×2-6	.....	.....	40×25
2-10	.....	.....	29
3-2	.....	.....	33
3-6	40×18	.....	37
3-10	20	.....	41
4-2	22	.....	.....
4-6	24	.....	40×49
4-10	26	.....	.....
5-2	28	.....	40×57
5-6	30	.....	61
5-10	32	.....	.....
5-0×5-2	.....	.....	57
5-6	.....	.....	61

NOTE — Storm-sash are made ¼ in. narrower and 1 in. longer than the opening sizes listed.

TABLE 24. Transoms, 1½ inches Thick.

Profit face measurements (in.)			
Stiles.....	129½	.....	.....
Top rail.....	129½	.....	.....
Bottom rail.....	129½	.....	.....






Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft. and in.	in.	ft. and in.	in.
2-6×1-2	26×10	3-4×1-2	36×10
1-6	14	1-6	14
1-10	18	1-10	18
2-8×1-2	28×10		
1-6	14		
1-10	18		
3-0×1-2	32×10		
1-6	14		
1-10	18		




NOTE — Transoms are made ¼ in. narrower and ½ in. shorter than the opening sizes listed.

TABLE 25. One-Light Sash, Divided, 1 3/8 inches Thick.

Profit face measurements (in.)			
Stiles	1 7/8	Vertical bar	3/8
Top rail	1 7/8	Muntin	3/8
Bottom rail	3		

		
2 LT. W.	3 LT. W.	6 LT. 3 W.

Sash Opening sizes	Glass sizes		
ft. and in.	in.	in.	in.
1-8x1-10	7 3/4x17		
2-2	21		
2-6	25		
2-0x1-10		6 1/2x17	6 1/2x8 3/4
2-2		21	10 3/4
2-6		25	12 3/4
2-10		29	14 3/4
2-4x1-10		7 3/4x17	7 3/4x8 3/4
2-2		21	10 3/4
2-6		25	12 3/4
2-10		29	14 3/4
2-8x1-10		9 1/2x17	9 1/2x8 3/4
2-2		21	10 3/4
2-6		25	12 3/4
2-10		29	14 3/4

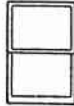
		
4 LT. 2 W.	4 LT. W.	8 LT. 4 W.

1-8x1-10	7 3/4x8 3/4		
2-2	10 3/4		
2-6	12 3/4		
3-0x1-10		7 3/4x17	7 3/4x8 3/4
3-2		21	10 3/4
3-6		25	12 3/4
3-10		29	14 3/4
3-4x1-10		8 1/2x17	8 1/2x8 3/4
3-2		21	10 3/4
3-6		25	12 3/4
3-10		29	14 3/4
3-2		33	16 3/4
3-6		37	18 3/4
3-8x2-6		9 1/2x25	9 1/2x12 3/4
3-10		29	14 3/4
3-2		33	16 3/4
3-6		37	18 3/4

NOTE—Sash are made 1/8 in. narrower and 1/32 in. shorter than the opening sizes listed.

TABLE 27. 1 3/8 inch Thick Two-Light Check Rail Windows for 3/8 inch Thick Insulating Glass.

Profit Face Measurements (in.)		
Stiles	1-15/16	
Top Rail	1-15/16	
Bottom Rail	3-1/8	
Check Rails	1-5/32	



2 LT.

Sash Opening Sizes	Two Light Windows	
	Glass Size	Glass Opening Size
ft. and in.	in.	in.
2-0x3-2	20x16	20 1/8x16 1/4
x3-10	x20	x20 1/8
2-4x3-2	24x16	24 1/8x16 1/4
x3-10	x20	x20 1/8
x4-6	x24	x24 1/8
2-8x3-2	28x16	28 1/8x16 1/4
x3-10	x20	x20 1/8
x4-6	x24	x24 1/8
3-0x3-2	32x16	32 1/8x16 1/4
x3-10	x20	x20 1/8
x4-6	x24	x24 1/8
3-4x3-2	36x16	36 1/8x16 1/4
x3-10	x20	x20 1/8
x4-6	x24	x24 1/8
3-8x3-2	40x16	40 1/8x16 1/4
x3-10	x20	x20 1/8
x4-6	x24	x24 1/8

NOTE—Windows are made 1/8 in. narrower and 1/16 in. shorter than sash opening sizes listed.

TABLE 26. 1 3/8 and 1 3/4 inches Thick One-Light Stationary Sash for 7/16 inch Thick Insulating Glass.

Profit Face Measurements (in.)		
Stiles	1-7/8	
Top Rail	1-7/8	
Bottom Rail	2-15/16	



1 LT.

Sash Opening Sizes	Glass Sizes	Glass Opening Sizes
ft. and in.	in.	in.
4-4x3-10	48x41	48 1/8x41 1/4
x4-2	x45	x45 1/8
x4-6	x49	x49 1/8
x5-2	x57	x57 1/8
5-0x3-10	56x41	56 1/8x41 1/4
x4-2	x45	x45 1/8
x4-6	x49	x49 1/8
5-8x4-2	64x45	64 1/8x45 1/4
x4-6	x49	x49 1/8

NOTE—Windows are made 1/8 in. narrower and 1/16 in. shorter than sash opening sizes listed.

TABLE 28. 2 1/4 and 2 5/8 inches Thick Stationary Sash for 1 inch Thick Insulating Glass.

Profit Face Measurements (in.)		
Stiles	1-7/16	
Top Rail	1-7/16	
Bottom Rail	2-1/16	


1 LT.

Sash Opening Sizes	Glass Sizes	Glass Opening Sizes
ft. and in.	in.	in.
4-4x4-6	48 1/4x50	49x50 1/2
x5-2	x58	x58 1/2
5-0x4-6	56 1/2x50	57x50 1/2
x5-2	x58 1/4	x58 1/2
5-8x4-6	64 1/2x50	65x50 1/2
x5-2	x58	x58 1/2
6-4x4-6	72 1/2x50	73x50 1/2
x5-2	x58	x58 1/2
7-0x4-6	80 1/2x50	81x50 1/2
x5-2	x58	x58 1/2
8-4x4-6	96 1/2x50	97x50 1/2
x5-2	x58	x58 1/2

NOTE—Profit sash are made 1/8 in. less in width than opening sizes listed.

TABLE 29. Two-Light, Full-Size (Double-Hung) Window Screens, $\frac{3}{4}$ inch and $1\frac{1}{8}$ inches Thick.

Prefit face measurements (in.) Stiles..... $1\frac{3}{4}$ Top rail..... $1\frac{3}{4}$ Bottom rail..... 3 Center rail..... $\frac{1}{4}$					
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
1-8×3-2	16×16	2-4×2-6	24×12	3-4×2-10	36×14
3-6	18	2-10	14	3-2	16
3-10	20	3-2	16	3-6	18
4-2	22	3-6	18	3-10	20
4-6	24	3-10	20	4-2	22
4-10	26	4-2	22	4-6	24
5-2	28	4-6	24	4-10	26
5-6	30	4-10	26	5-2	28
5-10	32	5-2	28	5-6	30
		5-6	30	5-10	32
		5-10	32		
2-0×2-6	20×12			3-8×3-6	40×18
2-10	14			3-10	20
3-2	16	2-8×2-10	28×14	4-2	22
3-6	18	3-2	16	4-6	24
3-10	20	3-6	18	4-10	26
4-2	22	3-10	20	5-2	28
4-6	24	4-2	22	5-6	30
4-10	26	4-6	24	5-10	32
5-2	28	4-10	26		
5-6	30	5-2	28		
5-10	32	5-6	30		
		5-10	32		
		3-0×2-10	32×14		
		3-2	16		
		3-6	18		
		3-10	20		
		4-2	22		
		4-6	24		
		4-10	26		
		5-2	28		
		5-6	30		
		5-10	32		

NOTE — Full-size window screens are made $\frac{1}{8}$ in. narrower and 1 in. longer than the opening sizes listed.

TABLE 30. One-Light Sash Screens, $\frac{3}{4}$ inch and $1\frac{1}{8}$ inches Thick.

Prefit face measurements (in.) Stiles..... $1\frac{3}{4}$ Top rail..... $1\frac{3}{4}$ Bottom rail..... 3					
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
1-8×1-10	16×17	2-4×1-10	24×17	3-4×1-10	36×17
2-2	21	2-2	21	2-2	21
2-6	25	2-6	25	2-6	25
		2-10	29	2-10	29
2-0×1-10	20×17	3-2	33	3-2	33
2-2	21	3-6	37	3-6	37
2-6	25				
2-10	29	2-8×1-10	28×17	3-8×1-10	40×17
3-2	33	2-2	21	2-2	21
3-6	37	2-6	25	2-6	25
		2-10	29	2-10	29
		3-2	33	3-2	33
		3-6	37	3-6	37
		3-0×1-10	32×17		
		2-2	21		
		2-6	25		
		2-10	29		
		3-2	33		
		3-6	37		

NOTE — One-light sash screens are made $\frac{1}{8}$ in. narrower and 1 inch longer than the opening sizes listed.

TABLE 31. Half-Window Screens, $\frac{3}{4}$ inch and $1\frac{1}{8}$ inches Thick.

Prefit face measurements (in.) Stiles..... $1\frac{3}{4}$ Top rail..... $1\frac{3}{4}$ Bottom rail..... 3					
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>	<i>ft and in.</i>	<i>in.</i>
1-8×1-8	16×16	2-0×1-4	20×12	2-6×1-6	28×14
1-10	18	1-6	14	1-8	16
2-0	20	1-8	16	1-10	18
2-2	22	1-10	18	2-0	20
2-4	24	2-0	20	2-2	22
2-6	26	2-2	22	2-4	24
2-8	28	2-4	24	2-6	26
2-10	30	2-6	26	2-8	28
3-0	32	2-8	28	2-10	30
		2-10	30	3-0	32
		3-0	32		
				3-0×1-10	32×18
				2-0	20
				2-2	22
				2-4	24
				2-6	26
				2-8	28
				2-10	30
				3-0	32
				3-4×1-6	36×14
				1-8	16
				1-10	18
				2-0	20
				2-2	22
				2-4	24
				2-6	26
				2-8	28
				2-10	30
				3-0	32

NOTE — Half-window screens are made $\frac{1}{8}$ in. narrower and 1 in. longer than the opening sizes listed.

TABLE 32. One-Light Screens for Cellar Sash, $\frac{3}{4}$ inch and $1\frac{1}{8}$ inches Thick.

Prefit face measurements (in.) Stiles..... $1\frac{3}{4}$ Top rail..... $1\frac{3}{4}$ Bottom rail..... 3		
Opening sizes	Glass sizes	
<i>ft and in.</i>	<i>in.</i>	<i>in.</i>
1-8×1-4	8×12	-----
2-0×1-0	10×12	6 $\frac{7}{8}$ ×8
1-4	16	-----
1-8	20	-----
2-0	24	-----
2-4×1-4	12×12	8×12
1-8	16	-----
2-0	20	-----
2-8×1-0	-----	9 $\frac{1}{2}$ ×8
1-4	-----	12
1-8	14×16	16
2-0	20	20
3-0×1-4	-----	10 $\frac{3}{4}$ ×12
1-8	-----	16
2-0	-----	20
3-4×1-4	-----	12×12
1-8	-----	16
2-0	-----	20
3-4	-----	24

NOTE — One-light screens for cellar sash are made $\frac{1}{8}$ in. narrower and $1\frac{1}{2}$ inches longer than the opening sizes listed.

6. GRADE MARKING AND LABELING

6.1 **GRADE MARKING OF EACH ITEM**—All standard stock ponderosa pine windows, sash and screens produced in conformity with the requirements set forth herein may be marked by stamp or label with the symbol of this standard "CS163-64" and the name or trademark of the manufacturer.

6.2 **CERTIFICATION OF SHIPMENTS**—In order to assure the purchaser that he is getting ponderosa pine windows, sash and screens of the quality specified herein, it is recommended that producers, either individually or in concert with their trade associations, grade mark each item as described above and also issue certificates with each shipment. The following wording is recommended for the certification statement:

"This ponderosa pine window (sash or screen) conforms to Commercial Standard CS163-64, as developed by the trade under the Commodity Standards Procedures of the U. S. Department of Commerce."

Name of manufacturer

7. NOMENCLATURE AND DEFINITIONS

7.1 The various terms used in this standard are defined as follows:

Sash—A sash is a single assembly of stiles and rails into a frame for holding glass, with or without dividing bars, to fill a given opening. It may be either open or glazed.
Window—A window consists of two or more single sash to fill a given opening. It may be either open or glazed.
Front or Cottage Sash—A sash in which the meeting rail is placed above the center of the opening.

MEASUREMENT:

Between Glass—The measurement across the face of any wood part that separates two sheets of glass.

Face Measure—The measurement across the face of any wood part exclusive of any solid mold or rabbet.

Finished Size—The measurement of any wood part overall, including the solid mold or rabbet.

Outside Opening—The measurement of any given article from outside to outside.

Wood Allowance—The difference between the outside opening and the total glass measurement of a given window or sash.

Full Bound—Sash having a similar width of wood in stiles and top and bottom rails; usually described as "same rail all around."

Stiles—The upright or vertical outside pieces of a sash or screen.

Rails—The cross or horizontal pieces of the frame work of a sash or screen.

Meeting Rails—The rails of a window that meet when the window is hung and closed.

Plain Rails—Meeting rails of the same thickness as the balance of the window.

Check Rails—Meeting rails sufficiently thicker than the window to fill the opening between the top and bottom sash made by the check strip or parting strip in the frame. They are usually beveled and rabbeted.

Bars—A bar may be either vertical or horizontal and extend the full width or length of the glass opening.

Muntin—A muntin applies to any short or light bar, either vertical or horizontal.

Solid Sticking—A mold that is worked on the article itself.

STANDING COMMITTEE

The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Office of Commodity Standards, National Bureau of Standards, U. S. Department of Commerce which acts as secretary for the committee.

Representing Manufacturers:

Mr. O. B. Smith, Plant Superintendent, Wm. Cameron & Co., Wholesale, 2400 Franklin Ave., Box 889, Waco, Tex. (Chairman)

Mr. W. A. Norman, Vice Pres., Production, Caradco, Inc., Dubuque, Iowa

Mr. Carl J. Binner, Morgan Co., Oshkosh, Wis.

Mr. Merle W. Baker, Product Dev. Engr., Rock Island Millwork, 2525 Fourth Ave., Rock Island, Ill.

Distributors:

Mr. R. S. Kuhn, Vice Pres., Iroquois Millwork Corp., Albany, N. Y.

Mr. W. A. Compton, Allen Millwork Manufacturer, P. O. Box 6029, Shreveport, La.

Mr. W. T. Spencer, Spencer Lumber Co., Gastonia, N. C. (Representing Carolina Lumber Building Supply Assn.)

Users:

Mr. Milton W. Smithman, Director, Technical Services, National Association of Home Builders, 1625 L Street, N. W., Washington 6, D. C.

Mr. John A. Reidelbach, Jr., Home Manufacturers' Assn., 910 17th Street, N. W., Washington 6, D. C.

Mr. Wm. Paul Jones, Dunaway & Jones, 2706 Richmond Street, Houston 6, Tex. (Representing American Institute of Architects)

HISTORY OF PROJECT

CS163-64:

First edition: On April 21, 1948, the National Woodwork Manufacturers Association requested the cooperation of the U. S. Department of Commerce in the establishment of a Commercial Standard for standard stock ponderosa pine windows, sash, and screens. After being circulated twice to the trade for consideration, the standard was promulgated on November 15, 1949 as CS163-49 and was made effective on December 15, 1949.

Revisions: The first revision was requested by NWMA on March 17, 1952 and after being circulated to the trade and found acceptable was issued on September 15, 1952, and became effective on October 15, 1952. A second revision, requested by NWMA on December 27, 1957, became effective for new production on February 20, 1959, following acceptance by a satisfactory majority of the trade.

CS193-53: On January 3, 1952 the National Woodwork Manufacturers Association requested the cooperation of the U. S. Department of Commerce in the establishment of a Commercial Standard for standard stock ponderosa pine insulating-glass windows and sash. After being circulated to the industry for consideration and again for acceptance, the standard was promulgated on June 9, 1953 as CS193-53 and became effective on July 20, 1953.

Current edition:

A suggested revision of CS163-59, which included a revision of CS193-53, was submitted to the U. S. Department of Commerce by the National Woodwork Manufacturers Association for development on February 25, 1963. A draft was prepared and many editorial changes were made. After approval by the new combined Standing Committees and review by the Forest Products Laboratory, the recommended standard was circulated to the trade for acceptance on September 12, 1963. Sufficient endorsements in the form of signed acceptances from individual producers, distributors, and users of this commodity were received to warrant promulgation of the new standard, CS163-64, Ponderosa Pine Windows, Sash, and Screens (Using Single Glass and Insulating Glass), to become effective on March 17, 1964.

Project Manager: Wm. H. Furcolow, Office of Commodity Standards, National Bureau of Standards, U. S. Department of Commerce.

Technical Adviser: Mr. L. O. Anderson, Division of Wood Engineering Research, Forest Products Laboratory, U. S. Department of Agriculture, Madison, Wis.

ACCEPTORS

The manufacturers, distributors, users, and others listed below have individually indicated in writing their acceptance of this Commercial Standard prior to its publication. The acceptances indicate an intention to utilize the Standard as far as practicable, but reserve the right to depart from it as may be deemed desirable. The list is published to show the extent of recorded public support for the Standard, and should not be construed as indicating that all products made by the acceptors actually comply with its requirements.

Products that meet all requirements of the standard may be identified as such by a certificate, grade mark, or label. Purchasers are encouraged to require such specific representation of compliance, which may be given by the manufacturer whether or not he is listed as an acceptor.

ASSOCIATIONS (General Support)

California Redwood Association, San Francisco, Calif.
Hardwood Plywood Institute, Arlington, Va.
Home Manufacturers Association, Washington, D. C.
Mississippi Retail Lumber Dealers Association, Inc., Jackson, Miss.
National Association of Lumber Salesmen, Inc., St. Louis, Mo.
National Woodwork Manufacturers Association, Chicago, Ill.
Ponderosa Pine Woodwork, Chicago, Ill.
Western Pine Association, Portland, Oregon

FIRMS AND OTHER INTERESTS

Addison-Rudesal, Inc., Atlanta, Ga.
Ammann & Whitney, New York, N. Y.
Anson & Gilkey Co., Merrill, Wisc.
Ashton, C. J., Co., Royal Oak, Mich.
Auto-Nailer Co., Atlanta, Ga.
Bardwell Robinson Co., Fargo, N. Dak.
Barger Millwork Co., Statesville, N. C.
Battenfeld Grease & Oil Corp., Kansas City, Mo.
Baxter, C. B., & Co., Kansas City, Mo.
Beasley & Sons Co., Nashville, Tenn.
Belcher - Evans Millworks Co., Inc., Birmingham, Ala.
Boise Cascade Corp., Spokane, Wash.
Brockway Smith Haigh Lovell Co., Boston, Mass.
Burris Building Material Co., Inc., Dallas, Tex.
Cameron, Wm., & Co., Waco, Tex.
Camlet, J. Thomas, Architect & Engineer, Garfield, N. J.
Cannon & Mullen, Architects, Salt Lake City, Utah
Caradco, Inc., Dubuque, Iowa
Carnahan Manufacturing Co., Inc., Loogootee, Ind.
Cellar Lumber Co., Westerville, Ohio
Charleston Plywood & Lumber Co., Charleston, S. C.
Circle Woodworking Corp., Richmond, Va.

Clarke Veneers and Plywood, Jackson, Miss.
Combs Lumber Co., Inc., Lexington, Ky.
Concord Lumber Co., Inc., Albany, N. Y.
Conrad & Cummings, Binghamton, N. Y.
Crestline, Wausau, Wisc.
Curtis Companies, Inc., Clinton, Iowa
Dakota Sash & Door Co., Aberdeen, S. Dak.
Danville Lumber & Manufacturing Co., Danville, Va.
Darby, Bogner & Associates, Inc., West Allis, Wisc.
Davidson Sash & Door Co., Inc., Lake Charles, La.
Davis Manufacturing Co., Inc., New Orleans, La.
Dealers Window Corp., Toledo, Ohio
Delta Millwork, Inc., Jackson, Miss.
Detroit Department of Public Works, City Engineer's Office, Detroit, Mich.
DeVille Lumber Co., Canton, Ohio
Disbrow & Co., Omaha, Neb.
Donlin Co., St. Cloud, Minn.
Duke Millwork, Inc., Thornwood, N. Y.
Edwards Sash, Door & Lumber Co., Tampa, Fla.
Evansville Sash & Door Co., Inc., Evansville, Ind.
Federal Millwork Corp., Northvale, N. J.
Gans, Carl H., Consultant, New York, N. Y.
Goshen Sash & Door Co., Goshen, Ind.
Grimm Lumber, Inc., Evansville, Ind.
H. & S. Lumber Co., Charlotte, N. C.
Harbor Sales Co., Inc., Baltimore, Md.
Hines, Edward, Lumber Co., Chicago, Ill.
Hurd Millwork Corp., Medford, Wis.
Independent Screen Co., Oklahoma City, Okla.
International Paper Co., Long-Bell Division, Kansas City, Mo.
Iroquois Millwork Corp., Albany, N. Y.
Jackson Sash & Door Co., Inc., Jackson, Miss.
Jamco Window Unit Corp., Northvale, N. J.
Jordan Millwork Co., Sioux Falls, S. D.
Lee Millwork Corp., Fairlawn, N. J.
Lester Brothers, Inc., Martinsville, Va.
Loeb, Laurence M., Architect, White Plains, N. Y.
M. W. Distributors, Rocky Mount, Va.
Mahoney Sash & Door Co., Canton, Ohio
Malta Manufacturing Co., Malta, Ohio
Marathon Millwork Corp., Wausau, Wis.
Mason City Millwork Co., Mason City, Iowa
McPhillips Manufacturing Co., Inc., Mobile, Ala.
Meadow River Lumber Co., Rainelle, W. Va.
Melnick, J. A. Corp., Northvale, N. J.
Memphis Sash & Door Co., Memphis, Tenn.
Merritt Lumber Yards, Inc., Reading, Pa.
Metropolitan Millwork, Inc., Brooklyn, N. Y.
Metropolitan Window Unit Corp., Brooklyn, N. Y.
Miller, Miller & Associates, Terre Haute, Ind.
Miller Millwork Corp., Charlotte, N. C.
Morgan Co., Oshkosh, Wisc.
Morgan Millwork Co., Baltimore, Md.
Morgan Sash & Door Co., Broadview, Ill.
National Lumber, Inc., North Haven, Conn.
National Wholesalers, North Haven, Conn.
National Woodworks, Inc., Birmingham, Ala.
Nebraska, University of, Lincoln, Neb.
Nixon Lumber Co., Inc., Memphis, Tenn.
Noelke - Lyon Manufacturing Co., Burlington, Iowa
Nurenburg, W. S., Fort Worth, Tex.
Oklahoma Sash & Door Co., Oklahoma City, Okla.
Palmetto Sash & Door Co., Inc., Orangeburg, S. C.
Pease Woodwork Co., Inc., Hamilton, Ohio
Peterson, L. L., Enterprises, St. Paul, Minn.
Phenix Manufacturing Co., Inc., Milwaukee, Wisc.
Pioneer Wholesale Supply Co., Salt Lake City, Utah
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
Portsmouth Lumber Corp., Portsmouth, Va.
Price, Beryl, Philadelphia, Pa.
Pullum Window Corp., Detroit, Mich.
Ready Hung Door Corp., Fort Worth, Tex.
Resnikoff, Abraham, Architect, New York, N. Y.
Rinehimer Brothers Manufacturing Co., Elgin, Ill.
Rinn-Scott Lumber Co., Chicago, Ill.
Rock Island Millwork, Rock Island, Ill.
Rolscreen Co., Pella, Iowa
Royal Glass & Millwork Corp., Englewood, N. J.
Sash, Door & Glass Corp., Richmond, Va.
Semling Menke Co., Merrill, Wis.
Seneca Lumber & Millwork, Inc., Fostoria, Ohio
Shinault Lumber Products, Inc., Memphis, Tenn.
Smith, Allen A., Co., Toledo, Ohio
Smith, Geo. P., Co., Charles City, Iowa
Southern Millwork Co., Tulsa, Okla.
Southwestern Laboratories, Fort Worth, Tex.
Southwestern Sash & Door Co., Joplin, Mo.
Swan Lake Moulding Co., Klamath Falls, Ore.
Tennessee Building Products, Inc., Nashville, Tenn.
Throop-Martin Co., Columbus, Ohio
Tulane Hardwood Lumber Co., Inc., New Orleans, La.
Vaughan, Geo. C., & Sons, San Antonio, Tex.
Vogel, Willis A., Architect & Consultant, Toledo, Ohio
Wabash Screen Door Co., Memphis, Tenn.
Walling Sash & Door Co., Wichita, Kans.
Washington Woodworking Co., Inc., Washington, D. C.
Watertown Sash & Door Co., Watertown, S. Dak.
Welch, Carroll E., Huntington, N. Y.
Wheaton Lumber Co., Inc., Wheaton, Md.
Whittier Ruhle Millwork Co., Ridgefield, N. J.
Williams, O. B., Co., Seattle, Wash.
Woodward Lumber Co., Seattle, Wash.
Young, Ray, Radburn, N. J.

U. S. GOVERNMENT AGENCIES

Commerce, Department of, National Bureau of Standards, Building Research Div., Washington, D. C.
Health, Education and Welfare, Department of, Washington, D. C.
Veterans Administration, Washington, D. C.

ACCEPTANCE OF COMMERCIAL STANDARD

CS163-64 PONDEROSA PINE WINDOW, SASH, AND SCREENS

(using single glass and insulating glass)

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this Commercial Standard.

Date_____

Office of Commodity Standards
National Bureau of Standards
U.S. Department of Commerce
Washington, D.C., 20234

Gentlemen:

We believe that this Commercial Standard constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production¹ distribution¹ purchase¹ testing¹
of this commodity.

We reserve the right to depart from the standard as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer_____

(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer_____

Organization_____

(Fill in exactly as it should be listed)

Street address_____

City, State, and ZIP code_____

¹ Underscore the applicable words. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interest, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

(Cut on this line)

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial Standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of Commercial Standards is to establish, for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the standard, where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function, performed by the Department of Commerce in the voluntary establishment of Commercial Standards on a nationwide basis is fourfold: First, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

federal register



National Bureau of Standards VOLUNTARY STANDARDS

Action on Proposed Withdrawal

In accordance with § 10.12 of the Department's "Procedures for the Development of Voluntary Product Standards" (15 CFR Part 10, as revised; 35 FR 8349 dated May 28, 1970), notice is hereby given of the withdrawal of the following Commercial Standards:

- CS 130-58, "Ponderosa Pine Doors."
- CS 163-64, "Ponderosa Pine Windows, Sash and Screens (Using Single Glass and Insulating Glass)"
- CS 171-58, "Hardwood Veneered Doors (Solid-Core, Hollow-Core and Panel and Sash)"
- CS 190-64, "Wood Double-Hung Window Units"
- CS 204-64, "Wood Awning Window Units"
- CS 205-64, "Wood Casement Window Units"
- CS 208-57, "Standard Stock Exterior Wood Window and Door Frames"
- CS 262-63, "Water-Repellent Preservative Non-Pressure Treatment for Millwork"
- CS 264-64, "Wood Horizontal-Sliding Window Units (All Sash Operating)"
- CS 265-64, "Wood Horizontal-Sliding Window Units (One or More Non-Operating Sash)"
- CS 266-64, "Wood Single-Hung Window Units"

It has been determined that each of these standards has become technically inadequate, and in view of the existence of up-to-date National Woodwork Manufacturers Association standards for the products covered, revision of the Commercial Standards would serve no useful purpose.

This action is taken in furtherance of the Department's announced intentions as set forth in the public notice appearing in the FEDERAL REGISTER of March 27, 1974 (39 FR 11319), to withdraw these standards.

The effective date for the withdrawal of these standards will be 60 days after the publication of this notice. This withdrawal action terminates the authority to refer to these standards as voluntary standards developed under the Department of Commerce procedures.

Dated: May 30, 1974.

RICHARD W. ROBERTS,
Director.